

**WEED MANAGEMENT IN GLYPHOSATE/DICAMBA/GLUFOSINATE – TOLERANT COTTON****J.L. Spradley****J.W. Keeling****P.A. Dotray****J.D. Reed****Texas A&M AgriLife Research****Lubbock, TX****Abstract**

Glyphosate/dicamba/glufosinate tolerant (DGT) cotton could improve control of many problem annual and perennial weeds on the Texas High Plains. Weed species including Palmer amaranth (*Amaranthus palmeri*), devil's-claw (*Proboscidea louisianica*), ivyleaf morningglory (*Ipomoea hederacea*), Russian thistle (*Salsola iberica*), kochia (*Kochia scoparia*), field bindweed (*Convolvulus arvensis*), woollyleaf bursage (*Ambrosia grayi*), and Texas blueweed (*Helianthus ciliaris*) are not always effectively controlled with glyphosate alone, but dicamba or glufosinate combined with glyphosate may improve control. This technology may also improve control of recently identified glyphosate- resistant Palmer amaranth populations.

The objectives of this study were 1) to evaluate Clarity (dicamba) applied early-postemergence and mid-postemergence alone or in combination with Liberty (glufosinate) or Roundup PowerMax (glyphosate) for Palmer amaranth and devil's-claw control in DGT cotton; 2) to compare Palmer amaranth and ivyleaf morningglory control with Clarity-based treatments in DGT cotton to standard weed management programs; and 3) determine crop response and lint yields in DGT cotton.

Field trials conducted near Lubbock and Lorenzo, TX in 2012 compared trifluralin applied preplant incorporated (PPI), and Clarity applied early-postemergence (EPOST) alone or in combination with Liberty, Warrant, or Roundup PowerMax. These treatments were followed by (fb) Liberty, Roundup PowerMax+Clarity, or Roundup PowerMax at mid-postemergence (MPOST). Treatments were applied using a CO<sub>2</sub>-pressurized backpack sprayer calibrated to deliver 15 gallons per acre. A DGT cotton variety was planted on May 9 in 2012 on 40-inch rows. Plots, 4 rows by 30 feet in length, were replicated four times. Weed control was estimated visually based on a standard scale of 0 to 100%, where 0 = no weed control and 100 = complete weed control, and verified with weed density counts.

At Lubbock, Roundup PowerMax and Roundup PowerMax+Clarity EPOST improved Palmer amaranth control compared to trifluralin alone. Roundup PowerMax, Roundup PowerMax+Clarity, and Liberty+Clarity improved devil's-claw control compared to trifluralin alone. All treatments applied MPOST controlled Palmer amaranth 99 to 100%. At Lorenzo, Roundup PowerMax, Roundup PowerMax+Clarity, and Liberty+Clarity controlled Palmer amaranth more effectively than Liberty alone. All treatments, with the exception of Liberty and Liberty fb Roundup PowerMax, controlled Palmer amaranth 99 to 100% 14 days after MPOST applications.

Roundup PowerMax+Clarity (100%), and Liberty+Clarity (89%) controlled ivyleaf morningglory more effectively than Roundup PowerMax (53%) or Liberty (68%) alone. Ivyleaf morningglory was controlled 94 to 100% with Roundup PowerMax+Clarity applied MPOST. Liberty fb Liberty (74%), Roundup PowerMax fb Roundup PowerMax (81%), and Liberty fb Roundup PowerMax (66%) controlled morningglory less effectively compared to Clarity-based treatments 14 days after MPOST applications. Little to no crop injury nor adverse yield response was observed following any herbicide treatment in crop tolerance trials.